Claims
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1. A dental therapeutic instrument for infiltrating and/or rinsing tissue or cavities bounded by tissue, in particular dental tissue or cavities bounded by dental tissue, with a therapeutic liquid, said instrument having

a) a storage container for the therapeutic liquid;

b) a cannula for introducing the therapeutic liquid into the tissue or into the cavities;

c) a pump which supplies the therapeutic liquid to the cannula from the storage container;

d) a pump which withdraws therapeutic liquid from the tissue by suction via the cannula,

characterised in that
the storage container (2; 102), the cannula (42; 142) and the pumps (15, 43, 47; 160, 180, 191) are combined into a handpiece-type unit.

2. Therapeutic instrument according to Claim 1, characterised in that the pump that supplies the therapeutic liquid to the cannula (42; 142) and the pump that aspirates the therapeutic liquid via the cannula (42; 142) are implemented by a single pump (15, 43, 47; 160, 180, 191), the working direction of which is reversible.

3. Therapeutic instrument according to Claim 2, characterised in that the single pump comprises a double-acting, linearly mobile piston (15) which with one end region (18) borders a first working space (14) which is connected to the reservoir via a check valve (12) and with the opposite end region (15b) borders a second working space (28) which communicates with the cannula (42), the first working space (14) communicating with the second working space (28) via a flow path (20, 21) in which a check valve (22) is situated which permits a flow of the therapeutic liquid only from the first working space (14) into the second working space (28).

4. Therapeutic instrument according to Claim 3, characterised in that the flow path leading from the first working space (14) to the second working space (28) is a bore (20, 21) which is directed axially through the piston (15).

5. Therapeutic instrument according to Claim 3 or 4, characterised in that the cross-section of the end region (18) of the piston (15) adjoining the first working space (14) is smaller than the cross-section of the end region (15b) of the piston (15) adjoining the second working space (28).

6. Therapeutic instrument according to one of Claims 2 to 5, characterised in that a control valve (31) is provided which in a first position connects the second working space (28) to the cannula via a flow path (33, 37) that is capable of being flowed through in both directions and in a second position connects the second working space (28) to

the cannula (42) and to a further flow path (10, 49, 50, 51) leading to the reservoir (2) via a flow path (34, 39, 40) that is capable of being flowed through only in the direction towards the cannula (42), a check valve (13) which exclusively permits a flow in the direction towards the second working space (28) being situated in the further flow path (10, 49, 50).

7. Therapeutic instrument according to Claim 6, characterised in that the control valve comprises a slide (31) which is capable of being displaced linearly in a bore (30).

8. Therapeutic instrument according to one of Claims 3 to 7, characterised in that the double-acting piston (15) is driven by an actuating piston (43) which is acted upon on one side by a compression spring (57) and which on the opposite side adjoins a pressure chamber (44) which in turn communicates with the outlet of a compressed-air pulse generator (47).

9. Therapeutic instrument according to Claim 8, characterised in that the inlet of the compressed-air pulse generator (47) is capable of being connected to a compressed-air supply cable (5) for conventional dental handpieces via a standard coupling.

10. Therapeutic instrument according to one of Claims 3 to 5, characterised in that the reservoir (2) is a detachably fitted syringe which exhibits a smooth-running syringe piston (58).

11. Therapeutic instrument according to Claim 10, characterised in that the syringe (2) is a re-usable syringe consisting of autoclavable material.

12. Therapeutic instrument according to Claim 10, characterised in that the syringe (2) is a disposable syringe.

13. Therapeutic instrument according to Claim 12, characterised in that the disposable syringe (2) has no piston rod.

14. Therapeutic instrument according to Claim 1 or 2, characterised in that the storage container is constituted by a syringe (102) with a syringe body (159) and a syringe piston (160), which is connected to a linearly mobile output member (184) of a reversible drive device (180, 190) for the syringe piston (160).

15. Therapeutic instrument according to Claim 14, characterised in that the drive device (180, 190) exhibits an electric motor (197) and a battery (200) energising said motor.

16. Therapeutic instrument according to Claim 14 or 15, characterised in that the drive device (180, 190) exhibits control electronics which are programmed in such a way that the syringe piston (160) is capable of being moved back and forth at a certain repetition frequency.

17. Therapeutic instrument according to Claim 16, characterised in that the control electronics are

programmed in such a way that the syringe piston (160) executes a larger stroke in the course of the inward movement than in the course of the outward movement.

18. Therapeutic instrument according to Claim 16 or 17, characterised in that the control electronics can be operated in a second operating mode in which the syringe piston (160) exclusively executes an inward movement.